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ANNUAL REPORT

DIVISION OF WATER RESOURCES

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

for the

FISCAL YEAR ENDING - June 30, 1986

GOVERNMENT DOCUMENTS
COLLECTION
JUL 18 1986
University of Massachusetts
Dartmouth College

DIVISION OF WATER RESOURCES

INTRODUCTION

Division's Primary Goals

The Division has three primary goals: 1) Data Collection, 2) Flood Control and 3) Water Resources Planning.

1. Collect, refine and update basic water resources data for dissemination to state, federal and local agencies and the general public.
2. Plan, implement and maintain works of improvement to prevent loss of life and damage to property from erosion, floodwater and sediment in the watersheds of the rivers and streams of the Commonwealth.
3. Facilitate the development of a statewide comprehensive water resources management plan for Massachusetts formulated from river basin plans being developed from local, regional and state assessments of water needs and resources in conformance with the Massachusetts Water Policy Statement.

Division's Legislative Authorization

The Division operates under M.G.L. Chapter 21, Sections 8 through 16, as amended by Chapter 589 of the Acts of 1983. At that time, the Division was placed exclusively under the supervision and control of the Commissioner of DEM and most of the duties formerly assigned to the Water Resources Commission were transferred to the Division of Water Resources. In 1984, the Division was designated by the Secretary of Environmental Affairs as the agency to provide the staff support to assist the Water Resources Commission in administering the Interbasin Transfer Act and the sections of the Coastal Zone Management Act reorganizing the Water Resources Commission relating to river basin planning and coordinating EOE's water resources planning efforts.

PERSONNEL OF THE DIVISION (as of June 30, 1986)

Kennedy, Charles F.	Director & Chief Engineer
Pyle, O. Fletcher	Associate Civil Engineer
Beshara, Michael L.	Associate Civil Engineer
Maguire, Kevin B.	Senior Civil Engineer
Terranova, Frank	Senior Civil Engineer
Thibedeau, Richard H.	Chief Planner
Phippen, Peter D.	Principal Planner
Bones, William F., Jr.	Principal Planner
Asen, Steven	Resources Planner
Siegfriedt, Faye N.	Resources Planner
Graham, Deborah	Resources Planner
Cook, Raymond C.	Program Manager
Lesser, William	Senior Planner
DiBattista, Cheryl	Administrative Assistant
Russo, Roseann	Senior Statistical Clerk
Maloney, Kim	Principal Bookkeeper
Smith, Michelle	Junior Clerk Typist

I. BASIC DATA

A. Water Resources Data Interchange

One of the important services of the Division of Water Resources is the dissemination of basic water resources data and assessment of data to federal, state and local government, water resource agencies and the general public.

During FY86, the Division responded in a timely manner to an average of 30 daily requests for information and publications.

B. Basic Data Acquisition

1. Basic Data Gathering

This program includes the measuring, orderly recording, evaluation and periodic reporting of precipitation, stream gauging, snow surveys, reservoir elevations and flood monitoring. This information is necessary for detailed water supply and flood control planning, design, construction and operation. The Division operates a system of 199 rainfall stations. Statistical records are maintained on daily, monthly and annual precipitation for each station and compilations for five geographic sections and the state as a whole are computed with comparison to the long-term normal. Rainfall records for calendar year 1985 are attached to this report.

Accomplishments during FY86:

- Monthly rainfall reports were computed and averaged. Records were kept and comparisons made to determine surplus/deficient rainfalls.

- Each month reservoir levels were received, recorded and reviewed to monitor water levels.

- During the winter months information on the amount and water content of snow on the ground was received. With this information the potential runoff was determined for flood control purposes.

2. Well Drilling Program

The Division is responsible for the yearly registration of well drillers in the Commonwealth. The law requires that within 30 days after a well is drilled, a well completion report must be filed.

Accomplishments during FY86:

- During the year 318 well drillers were registered.

- More than 4900 well completion reports were received and filed for future reference.

3. Water Use Data Program

This program focuses on refining water use information for input into the data base of the U.S. Geological Survey (USGS) State Water Use Data System (SWUDS) through a Division of Water Resources/USGS cooperative program to automate basic water resources data. The system is designed to be of maximum utility to other water resources agencies and to the DWR river basin planning effort.

Accomplishments during FY86:

- Of the 1005 active community water supply wells listed in DWR records, 880 have been accurately located and entered into the data base. The remaining 125 public water supply sources are being analyzed and coded.

- Twenty-four data points of information for each of the major water supply systems have been automated.

C. Regional Resource Evaluations

1. Water Resources and Priorities Study

This study is conducted in cooperation with the Soil Conservation Service and is designed to expand information supporting the Early Acquisition of Reservoir Sites Program for future water needs. This study evaluates and prioritizes the prime reservoir sites in the State's 27 river basins identified in the Massachusetts Water Resources Study completed in 1978. Using a screening process, the number of sites were reduced to 50. Field work was completed and work focused on the preparation of draft site reports.

Accomplishments during FY'86:

- Ten draft site reports using a new format were completed.

2. "Atlas Program" - (Groundwater Favorability Studies)

This cooperative USGS/DWR Program produces basic hydrologic information and assesses the quantity and quality of ground and surface water resources for each river basin in the state.

Accomplishments during FY'86:

- Work continued with the Westfield/Farmington Basin study, the final one in this series.

- All but five of the basin studies have been published and distributed. The Chicopee, French/Quinebaug, Cape Cod, Blackstone and Westfield/Farmington studies are in final stages of publication.

- A final state summary atlas begun during this year, will be finalized during FY'87.

3. Stream Gaging Program

This program is conducted in cooperation with the U.S. Geological Survey.

Accomplishments during FY'86:

- Streamflow data was collected for the 78 gaging stations operating in 1986.
- Analysis of the 1985 water year surface water data was completed.

4. Groundwater Assessments Study Program

This cooperative program with the U.S. Geological Survey provides baseline data on major aquifers of river basins in the Commonwealth. These comprehensive assessments identify areal extent, depth, hydrologic characteristics, the quality and quantity of water and the effects of water use alternatives.

Accomplishments in FY'86:

- Two basin assessments have been completed with publication and distribution of the Mattapoissett River Basin Study in 1985 and publication of the Connecticut River Basin Study in the latter part of calendar year 1986.
- Seven basin studies were in progress during fiscal year 1986: Charles, Taunton, Plymouth, Nashua, Blackstone, North, Neponset.

D. Early Acquisition of Reservoir Sites Program

The Division is authorized to acquire land, water or easements to protect future water resources values and conserve impoundment sites for the purpose of flood control, low flow augmentation and/or municipal water supply. Previous acquisitions have assisted to augment the public water supplies serving the communities of Newburyport, Salem, Beverly, Abington, Rockland and sections of Hanson, Pembroke, Norwell, and Hingham.

Accomplishments in FY'86:

- Acquisition of land to expand the Emerson Brook Reservoir in Middleton, serving the communities of Danvers and Middleton, was approved by the Water Resources Commission.
- An application from the City of Brockton to acquire a future reservoir site in Kingston was reviewed and detailed information pertaining to the proposed site was developed by the Division.

E. Massachusetts Water Resources Authority - Long Range Water Supply Study

This comprehensive study was initiated by the Metropolitan District Commission to evaluate the alternative solutions to meet the water supply needs of the Metropolitan Boston area. It continues under the direction of the Massachusetts Water Resources Authority. The study encompasses the water use, demand and supply alternatives for the 45 communities presently served.

During FY'86, the Division participated in this study by:

- Developing the basic water resources data on local safe yields used in this study.
- Reviewing drafts of the material produced.
- Attendance at several public meetings held during the course of the year.

II. FLOOD CONTROL

A. Watershed Protection and Flood Prevention Act (PL 566) Program

The flood control program, to reduce damage caused by floods, of the Division of Water Resources is a cooperative effort with the U.S. Department of Agriculture, Soil Conservation Service under the Watershed Protection and Flood Prevention Act (PL 566). The first flood control project was built in 1961 and since then 29 projects have been completed. The Division of Water Resources, with annual budget allocations, is responsible for maintaining 23 of these projects. Vandalism is a problem at the sites because of all terrain vehicles that enter the sites and destroy the protective vegetation. To remedy this situation additional maintenance funds have been requested in the FY '87 budget.

Accomplishments during FY'86:

- Fisk site in Framingham -- construction is on schedule.
- Schoolhouse Lake site in Washington -- the necessary permits are being obtained and a contract for construction will be executed early in FY'87.
- Clam Lake site in Sandisfield -- funds have been requested in order to utilize the area for recreation and as a flood control facility.
- Washington Mountain Lake Dam in Washington -- investigations are under way to determine the cause and evaluate the alternatives for repairs required because of a seepage problem.
- 1000 Acre Swamp site in New Marlboro -- the water control gate needs repair and funds for repair have been requested in the annual maintenance budget. The State of Connecticut will be billed for their share of the repairs in accordance with the original interstate agreement.

B. Floodplain Management Studies

The joint DWR/SCS (U.S. Soil Conservation Service) studies, authorized by Section 6 of Public Law 83-566, provide needed information to communities where flood damage is a serious concern and local governments want to take action to reduce these damages; thus, these studies are site specific and of a problem-solving nature.

The Division of Water Resources is the coordinating agency for the SCS Flood Management Program. It receives applications from the communities, provides data used in conducting the studies and coordinates agency review of draft reports.

Accomplishments during FY'86:

- Salisbury Brook in the City of Brockton -- the preliminary report was completed and is presently under review by city officials.
- Congamond Lakes in the Town of Southwick -- a floodplain management study for the Congamond Lakes as requested by the town and the Hampden Conservation District, has been completed. The study included flood damage assessment, solutions to problems of sedimentation and debris accumulation, water quality improvement and the adequacy of outlet structures.
- North River in the Town of Colrain -- a plan of work for this study was completed and the study initiated to develop alternatives in order to reduce flooding, control excessive stream bank erosion and sedimentation and to assess local needs and objectives.

C. Federal Emergency Management Agency Program

1. National Flood Insurance Program

Of the participating communities in the Commonwealth, 295 are in the Regular Program and 25 in the Emergency Program. Six (6) communities have been suspended from the program for failure to adopt required land use measures.

2. Flood Hazard Management Program (FHMP)

The Flood Hazard Management Program (FHMP) with assistance from the Federal Emergency Management Agency (FEMA) is empowered to render floodplain management assistance to three hundred and twenty (320) local communities through the State Support Service Element and the Community Assistance Program (SSSE/CAP). FHMP activities include working with local community officials to assist them to become self-sufficient in floodplain management. This involves visits to communities, telephone coordination and review of floodplain development projects, as requested by local officials.

In February, a new Program Manager was hired. In addition, an Assistant Planner and Administrative Assistant were hired on an 03 contract basis. Hiring of new staff members will enable the Division to carry out and complete the FHMP objectives for fiscal years 1986 and 1987.

Accomplishments during FY'86:

- Secured from FEMA modification of current year contract (FY 1986).

- Conducted forty (40) Community Assistance visits in designated local communities to provide on-site mandatory technical assistance to implement FEMA-NFIP Regulatory requirements, the Massachusetts Building Code and the Massachusetts Wetland Protection Act.

- Distributed 3,000 National Flood Insurance Program map publications to private industries, local communities, public agencies and other organizations.

- Provided technical assistance for early conversion of the Town of New Salem, from the emergency phase to the regular phase of the National Flood Insurance Program through ordinance evaluation, land permit assessment and evaluation of the effectiveness of procedures used by town officials.

- Contacted eighty-five (85) communities by telephone to establish a working relationship and to offer technical assistance where needed.

- Reviewed 200 permit requests made to local officials by land owners, engineers and planners.

III. WATER RESOURCES PLANNING

A. River Basin Planning Program

The Division of Water Resources is responsible for implementing the Water Resources Commission's Water Resources Management Planning Regulations (313CMR2.00). The basic purpose of these regulations is to establish a framework for developing river basin plans and a statewide comprehensive water resources management plan for Massachusetts. These plans are being developed from local, regional and state assessments of water needs and resources in conformance with the Massachusetts Water Supply Policy Statement.

Accomplishments during FY'86:

- Completed collecting water resources data from communities in the Charles and Ipswich River Basins.
- Prepared year 2020 water need projections for the Charles and Ipswich River Basins.
- Prepared tables and sections of the Inventory and Analysis of Current and Projected Water Use reports for these basins.
- Completed work on reactivating and updating the hydrologic simulation computer model for the Ipswich River. A report describing the variables used the model and the results of the various "runs" is being drafted. This effort includes the collection and analysis of 1985 water use data from local water suppliers in order to refine the data on current and projected water use in the Ipswich Study Area and the input of additional water resources data in the computer model.
- Published a "Directory of State, Federal and Regional Water Planning and Management Agencies".
- Prepared water resources planning reports to include an analysis of available water resources and projected water needs for the Towns of Wellesley, Natick, Needham and Dover to assist DCPO in allocating the water rights of the Elm Bank property in Dover.
- Began the process to update the 1982 Municipal Water Resources Management Plan - Phase II Questionnaire by requesting communities applying for DEQE local grants to submit a 1985 addendum.
- Developed a process to estimate the amount of self-supplied agricultural water use.

B. State Land Management Planning

To assist in the development of the Guidelines for Operation and Land Stewardship (G.O.A.L.S.) plans for the State's Forest and Parks, the Division provides water resources data and reviews the water resources section of the draft plans.

Accomplishments in FY'86:

- Reviewed the hydrologic section for the Daughters of the American Revolution and Wampatuck State Parks plans.

C. Interbasin Transfer Act

The Interbasin Transfer Act delegated to the Water Resources Commission the Authority to approve or disapprove the transfer of water between river basins. The Division is responsible for coordinating the technical review of proposed interbasin transfers.

Accomplishments during FY'86:

- Prepared application forms, established review procedures and published an explanation booklet entitled: "A Guide to the Application of the Interbasin Transfer Act and Regulations".
- Coordinated the technical review of Brockton's application under the Interbasin Transfer Act to transfer four million gallons per day from Pine Brook in Kingston for use by the Brockton Regional Water Supply System in the Taunton Basin.
- Reviewed applications for determination of applicability and insignificance.

D. Water Resources Planning Task Force

The Water Resources Commission established a Water Resources Planning Task Force to assist the Commission in coordinating water resources planning among the agencies and departments in the Executive Office of Environmental Affairs. The task force is the primary mechanism to implement Chapter 21A Section 8B(b) establishing the planning, coordinating function of the Commission, as reorganized in 1983. The Division chairs and provides staff support to the task force.

The Task Force met monthly during FY'86 and focused on the following issues:

- Developing guidelines for establishing minimum instream flow levels.
- Developing guidelines for municipal water conservation programs.
- Reviewed application procedures, forms and explanatory materials being prepared for the implementation of the Interbasin Transfer Act.

E. Water Resources Policy Task Forces

The Division actively participates in WRC and other EOEa agency task forces formed to address various water resources policy issues.

Task Forces active during FY'86:

- Marine Water Quality Task Force
- Water Supply Task Force
- Drought Management Task Force
- Cape Cod Aquifer Assessment Task Force
- Ocean Sanctuaries Task Force
- Water Resources Policy Task Force

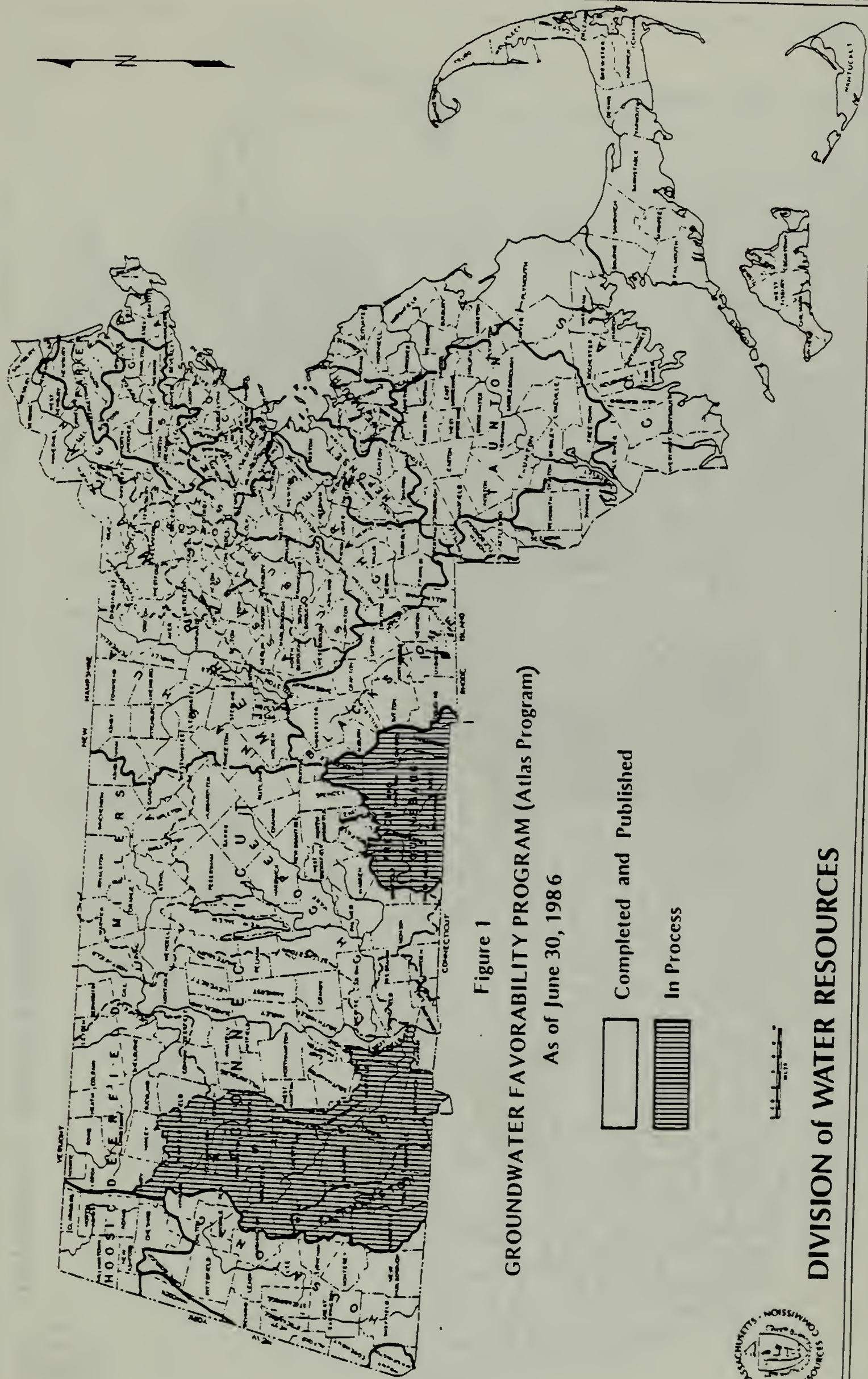


Figure 1
GROUNDWATER FAVORABILITY PROGRAM (Atlas Program)
As of June 30, 1986

Completed and Published
In Process



DIVISION of WATER RESOURCES

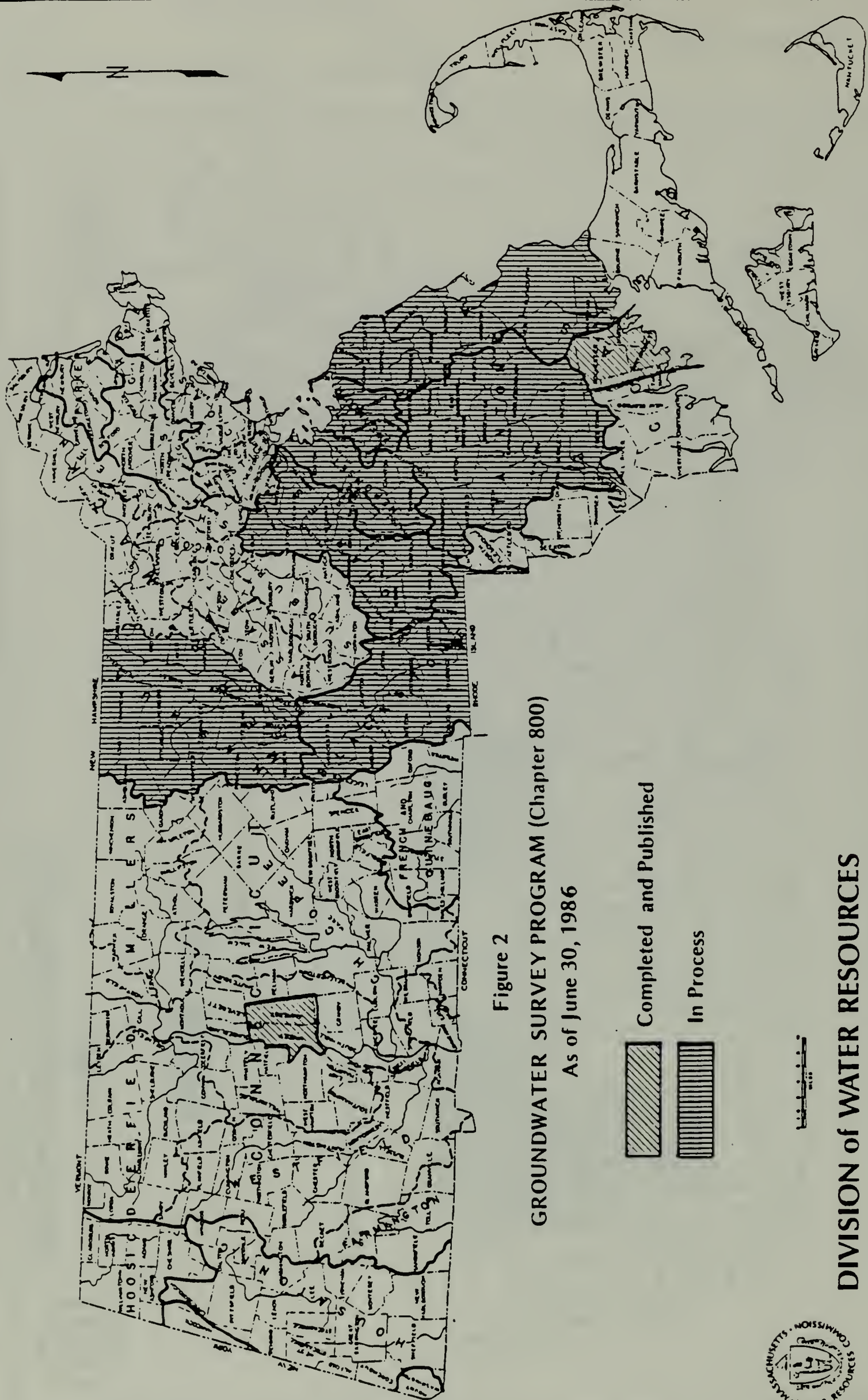


Figure 2
GROUNDWATER SURVEY PROGRAM (Chapter 800)
As of June 30, 1986



DIVISION of WATER RESOURCES

MASSACHUSETTS PRECIPITATION 1985
(inches)

	<u>State</u>	<u>Northeast Section</u>	<u>Southeast Section</u>	<u>Central Section</u>	Connecticut <u>River Section</u>	<u>Western Section</u>
January	1.17	0.92	1.28	1.09	1.21	1.27
February	2.37	2.15	2.05	2.48	2.39	2.45
March	2.88	2.75	2.78	2.81	2.95	3.00
April	1.48	1.32	1.50	1.75	1.55	1.23
May	3.72	3.64	4.97	3.56	3.71	3.71
June	3.90	3.70	4.48	3.78	4.35	4.90
July	3.36	3.48	3.39	3.02	5.75	4.78
August	6.77	5.57	10.29	5.34	4.64	3.55
September	3.41	3.41	1.85	3.98	5.25	5.07
October	2.29	2.58	1.81	3.13	3.07	2.76
November	6.27	7.08	6.26	6.58	6.65	5.28
December	1.55	1.27	1.12	1.73	1.81	1.98
Year	39.17	37.87	41.78	39.25	43.33	39.98
Normal	44.33	42.70	44.85	44.77	45.16	45.14

MASSACHUSETTS PRECIPITATION 1985
DEVIATION FROM NORMAL
(inches)

	<u>State</u>	<u>Northeast Section</u>	<u>Southeast Section</u>	<u>Central Section</u>	Connecticut <u>River Section</u>	<u>Western Section</u>
January	-2.48	-2.75	-2.69	-2.72	-2.20	-1.96
February	-0.99	-1.28	-1.62	-1.05	-0.93	-0.54
March	-0.99	-1.07	-1.45	-1.27	-0.72	-0.40
April	-2.18	-2.30	-2.53	-2.03	-2.15	-2.56
May	+0.03	+0.28	+1.55	+0.00	-0.39	-0.35
June	+0.32	+0.32	+1.12	+0.08	+0.38	+0.72
July	-0.32	+0.02	+0.40	-0.52	+1.62	+0.44
August	+2.81	+1.98	+6.28	+1.69	+0.62	-0.71
September	-0.18	-0.07	-1.77	+0.26	+1.52	+0.99
October	-1.24	-0.72	-1.79	-0.27	-0.43	-0.65
November	-2.86	-2.42	-0.70	-3.32	+0.03	-3.54
December	-2.23	-2.41	-3.00	-2.21	-1.86	-1.62
Total Excess or Deficiency for Year 1985	-10.31	-10.42	-6.20	-11.36	-4.51	-10.18

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Maguire, Kevin B.	Senior Civil Engineer
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Phippen, Peter D.	Principal Planner
Bones, William F., Jr.	Principal Planner
Asen, Steven	Resources Planner
Siegfriedt, Faye N.	Resources Planner
Graham, Deborah L.	Resources Planner
Biggio, Linda M.	Resources Planner
Cook, Raymond C.	Program Manager
Lesser, William H.	Senior Planner
DiBattista, Cheryl	Administrative Assistant
Russo, Roseann	Senior Statistical Clerk
Maloney, Kim P.	Principal Bookkeeper
Gonsalves, Eve M.	Junior Clerk Typist

Division of Water Resources

Introduction

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The Division has three primary goals: 1) Data Collection, 2) Flood Control and 3) Water Resources Planning.

1. Collect, refine and update basic water resources data for dissemination to state, federal and local agencies and the general public.
2. Plan, implement and maintain works of improvement to prevent loss of life and damage to property from erosion, floodwater and sediment in the watersheds of the rivers and streams of the Commonwealth.
3. Facilitate the development of a statewide comprehensive water resources management plan for Massachusetts formulated from river basin plans being developed from local, regional and state assessments of water needs and resources in conformance with the Massachusetts Water Policy Statement.

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I. BASIC DATA

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During FY87, the Division responded in a timely manner to an average of 30 daily requests for information and publications.

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1. Basic Data Gathering

This program includes the measuring, orderly recording, evaluation and periodic reporting of precipitation, stream gaging, snow surveys, reservoir elevations and flood monitoring. This information is necessary for detailed water supply and flood control planning, design, construction and operation. The Division operates a system of 201 rainfall stations. Statistical records are maintained on daily, monthly and annual precipitation for each station and compilations for five geographic sections and the state as a whole are computed with comparison to the long-term normal. Rainfall records for calendar year 1986 are attached to this report.

Accomplishments during FY87:

Monthly rainfall reports were computed and averaged. Records were kept and comparisons made to determine surplus/deficient monthly and annual precipitation.

Monthly reservoir levels were received, recorded and reviewed to monitor water levels.

During the winter months information on the amount and water content of snow on the ground was received. With this information the potential runoff was determined for flood control purposes.

Funds have been requested to automate those stations used to compute regional and state averages.

2. Well Drilling Program

The Division is responsible for the yearly registration of well drillers in the Commonwealth. The law requires that within 30 days after a well is drilled a well completion report must be filed.

Accomplishments during FY87:

During the year 319 well drillers were registered.

More than 7600 well completion reports were received and filed for future reference.

3. Water Use Data Program

This program focuses on refining water use information for input into the data base of the U.S. Geological Survey (USGS) State Water Use Data System (SWUDS) through a Division of Water Resources/USGS cooperative program to automate basic water resources data. The system is designed to be of maximum utility to other water resources agencies and to the DWR river basin planning effort.

Accomplishments during FY87:

Of the active community water supply sources listed in the Division's records most have been located accurately and entered into the data base. The remaining public water supply sources are being analyzed and coded.

C. Regional Resource Evaluations

1. Water Resources and Priorities Study

This study is conducted in cooperation with the Soil Conservation Service and is designed to expand information supporting the Early Acquisition of Reservoir Sites Program for future water needs. This study evaluates and prioritizes the prime reservoir sites in the State's 27 river basins identified in the Massachusetts Water Resources Study completed in 1978. Using a screening process, the number of sites were reduced to 50. Field work was completed and work focused on the preparation of draft site reports.

Accomplishments during FY87

Work suspended at present.

2. "Atlas Program" - (Groundwater Favorability Studies)

This cooperative USGS/DWR Program produces basic hydrologic information and assesses the quantity and quality of ground and surface water resources for each river basin in the state.

Accomplishments during FY87:

Field work has been completed on the Westfield/Farmington Basin study. It is the final one in this series.

All but two of the basin studies have been published and distributed. The French/Quinebaug and Westfield/Farmington studies are in final stages of publication.

A final state summary atlas underway this year will be finalized during FY88.

3. Stream Gaging Program

This program is conducted in cooperation with the U.S. Geological Survey.

Accomplishments during FY87:

Streamflow data was collected for the 78 gaging stations operating in 1987.

Analysis of the 1986 water year surface water data was completed.

4. Groundwater Assessments Study Program

This cooperative program with the U.S. Geological Survey provides baseline data on major aquifers of the river basins in the Commonwealth. These comprehensive assessments identify areal extent, depth, hydrologic characteristics, the quality and quantity of water and the effects of water use alternatives.

Accomplishments during FY87:

Two basin assessments have been completed. The Connecticut River Basin study was published and distributed in 1986. The first part of the Cape Cod Basin study was published as well.

Peer review has been completed on the Charles, Taunton and Nashua Basin studies and all are ready to be published.

Six studies are underway; the Blackstone, North and Neponset Basin studies; a statewide study to assess bedrock aquifers; a Cape Cod Model study which seeks to determine the amount of recharge to the Cape Cod Aquifer from precipitation; and a Plymouth - Carver Aquifer Study.

D. Early Acquisition of Reservoir Sites Program

The Division is authorized to acquire land, water or easements to protect future water resources values and conserve impoundment sites for the purpose of flood control, low flow augmentation and/or municipal water supply. Previous acquisitions have augmented the public water supplies serving Newburyport, Salem, Beverly, Abington, Rockland and sections of Hanson, Pembroke, Norwell and Hingham.

Accomplishments in FY87:

The towns of Danvers and Middleton began acquisition of land to expand Emerson Brook Reservoir in Middleton which serves both communities. The Water Resources Commission approved this acquisition in 1986.

E. Massachusetts Water Resources Authority - Long Range Water Supply Study

This comprehensive study was initiated by the Metropolitan District Commission to evaluate the alternative solutions to meet the water supply needs of the Metropolitan Boston area. It continues under the direction of the Massachusetts Water Resources Authority. The study encompasses the water use, demand and supply alternatives for the 45 communities presently served.

During FY87, the Division participated in this study by:

Reviewing drafts of the material produced.

Attendance at several public meetings held during the course of the year.

II. FLOOD CONTROL

A. Watershed Protection and Flood Prevention Act (PL 566) Program

The flood control program, to reduce damage caused by floods, of the Division of Water Resources is a cooperative effort with the U.S. Department of Agriculture, Soil Conservation Service under the Watershed Protection and Flood Prevention Act (PL 566). The first flood control project was built in 1961 and since then 29 projects have been completed. The Division of Water Resources, with annual budget allocations, is responsible for maintaining 23 of these projects. Vandalism is a problem at the sites because of all terrain vehicles that enter the sites and destroy the protective vegetation. To remedy this situation additional maintenance funds have been requested in the FY88 budget.

Accomplishments during FY87:

Fisk site in Framingham -- construction is complete. A landscaping plan is being developed.

Schoolhouse Lake site in Washington -- construction is underway and on schedule. The contract was signed on July 25, 1986 and completion is expected in FY89.

Clam Lake site in Sandisfield -- funds have been requested in order to utilize the area as a flood control facility and for recreation.

Washington Mountain Lake Dam in Washington -- investigations are under way to determine the cause and evaluate the alternatives for repairs required because of a seepage problem.

1000 Acre Swamp site in New Marlboro -- the water control gate needs repair and funds for repair have been requested in the annual maintenance budget. The State of Connecticut will be billed for their share of the repairs in accordance with the original interstate agreement.

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The joint DWR/SCS (U.S. Soil Conservation Service) studies, authorized by Section 6 of Public Law 83-566, provide needed information to communities where flood damage is a serious concern and local governments want to take action to reduce these damages; thus, these studies are site specific and of a problem-solving nature.

The Division of Water Resources is the coordinating agency for the SCS Flood Management Program. It receives applications from the communities, provides data used in conducting the studies and coordinates agency review of draft reports.

Accomplishments during FY87

North River (Deerfield River Basin) in the Town of Colrain -- after this study was initiated, the area was hit by floods caused by the storms of March 31, April 1 and April 4-8, 1987. Because of the storms, the initial data collected was affected and may have to be checked for its accuracy. SCS is now testing the validity of this data. Work continues, meanwhile SCS has spent half a million federal dollars repairing flood damages to agriculture, streambanks and infrastructure in this part of the Deerfield River.

Salisbury Brook in the City of Brockton -- the preliminary report was completed and has been reviewed by city officials.

C. Federal Emergency Management Agency Program

1. National Flood Insurance Program

Of the participating communities in the Commonwealth, 313 are in the Regular Program and 10 in the Emergency Program. Five communities have been suspended from the program for failure to adopt required land use measures.

2. Flood Hazard Management Program

The Flood Hazard Management Program (FHMP) assisted local communities in evaluating the effectiveness of their floodplain management procedures. Recommendations for improved procedures were made during telephone conversations and personal visits to communities. Workshops, review of local bylaws and review of selected projects in the floodplain were additional accomplishments during the past year. A major undertaking was the revision of the State Building Code, Section 744, governing construction in the floodplain was necessitated by recent changes to the National Flood Insurance Program (NFIP) Regulations by the Federal Emergency Management Agency (FEMA). These regulatory changes by FHMP developed a model bylaw to assist communities to understand whether or not the present floodplain bylaw met current NFIP regulations of FEMA. In addition, FHMP developed five model bylaws to assist communities in assessing whether or not the present floodplain bylaw met current NFIP criteria.

Accomplishments during FY87:

Conducted 45 Community Assistance Visits to communities not visited previously and provided on-site assistance to implement NFIP regulatory requirements of FEMA, the Massachusetts State Building Code Floodplain requirements and the Massachusetts Wetlands Protection Act.

Distributed 3000 National Flood Insurance maps and publications to private industry, public agencies, property owners, municipalities and other organizations.

Presented 5 Flood Loss Reduction Workshops state-wide to community officials involved in the permitting of structures in the floodplain. Those attending were primarily Building Inspectors and Conservation Agents.

Completed the "406" plan which recommended improvements to flood hazard mitigation practices in the wake of Hurricane Gloria.

Revised Section 744 of the State Building Code and developed model bylaws to assist municipalities in meeting the new NFIP requirements.

Made emergency site visits because of flooding events in the towns of Andover and Sandwich to assist them in properly applying floodplain management regulations while in the process of reviewing and permitting repairs to damaged structures in the floodplain.

Assisted FEMA officials during March/April 1987 floods to identify which communities with flood damage were eligible for disaster assistance.

III. WATER RESOURCES PLANNING AND MANAGEMENT

A. River Basin Planning Program

The Division of Water Resources is responsible for implementing the Water Resources Management Planning Regulations (313 CMR 2.00) of the Water Resources Commission. The purpose of these regulations is to establish a framework for developing river basin plans and a statewide comprehensive water resources management plan for Massachusetts. These plans are being developed from local, regional and state assessments of water needs and resources in conformance with the Massachusetts Water Supply Policy Statement.

Accomplishments during FY87:

Completed collection of water resources data from communities in the Nashua and Neponset River Basins.

Prepared year 2020 water need projections for the Nashua and Neponset River Basins.

Prepared tables and sections of the "Inventory and Analysis of Current and Projected Water Use" reports for both of these basins.

Published a "Directory of State, Federal and Regional Water Planning and Management Agencies".

Published an "Inventory and Analysis of Current and Projected Water Use in the Ipswich River Basin Study Area - Volume I".

Completed a draft of "Analysis of Water Resources and Water Use and Development of Alternatives to Meet Projected Water Demand - Ipswich River Basin - Volume II".

Provided technical analysis while preparing legislation for the allocation of water rights to the Elm Bank property in Dover.

B. State Land Management Planning

To assist in the development of the Guidelines for Operation and Land Stewardship (G.O.A.L.S.) plans for the State's Forest and Parks, the Division provides water resources data and reviews the water resources section of the draft plans.

Accomplishments in FY87

Reviewed the hydrologic section of the plans for the Wachusett Mountain State Reservation, Myles Standish State Forest and Harold Parker State Forest.

C. Interbasin Transfer Act

The Interbasin Transfer Act delegated to the Water Resources Commission the authority to approve or disapprove the transfer of water between river basins. The Division is responsible for coordinating the technical review of proposed interbasin transfers.

Accomplishments during FY87:

Assisted in the preparation of "Guidelines for Interpreting the Interbasin Transfer Act's Criteria For Approval as Applied to: An Interbasin Transfer of Wastewater."

D. Water Resources Planning Task Force

The Water Resources Commission established a Water Resources Planning Task Force to assist the Commission in coordinating water resources planning among the agencies and departments in the Executive Office of Environmental Affairs. The task force is the primary mechanism to implement Chapter 21A Section 8B(b) establishing the planning and coordinating functions of the Commission, as reorganized in 1983. The Division chairs and provides staff support to the Task Force.

The Task Force met bi-monthly during FY87 and focused on the following issues:

Developing guidelines for establishing minimum instream flow levels.

Developing guidelines for Local Water Resources Management Plans.

Standardization of Water Resources Data.

E. Ocean Sanctuary Program

The Ocean Sanctuaries Act, M.G.L. C. 132A ss. 13 and 16-18 and Regulations (302 CMR 5.00) places the ocean sanctuaries under the control of the Department of Environmental Management. The Division's Chief Planner was designated Ocean Sanctuaries Coordinator responsible for implementing the Act which states that sanctuaries shall "be protected from any exploitation, development, or activity that would seriously alter or otherwise endanger the ecology or the appearance of the ocean..."

Accomplishments during FY87:

Participated in the Ocean Sanctuaries Act Study Group established by Ch. 369 of the Acts of 1984 to "study and investigate the consequences of, and alternatives to, ocean discharge of wastewater into the Ocean Sanctuaries".

Reviewed the alternatives and plans of the Town of Dartmouth relative to increasing the ocean discharge of wastewater (Ch. 369 of the Acts of 1984). The Department must determine whether there are other disposal methods, including land application.

Reviewed Chapter 91 permits for consistency with the "public necessity and convenience" provision of the Ocean Sanctuaries Act.

Reviewed the proposed revision of Chapter 91 as it relates to the Ocean Sanctuaries Act.

Participated in the EOEa Marine Resources Coordinating Committee (MRCC) Steering Committee and MRCC Water Quality Task Force. An Action Plan was completed to address fisheries and water quality problems which included a recommendation to hire a Regional Planner III to provide technical planning for the Ocean Sanctuaries Coordinator.

Disseminated information on Ocean Sanctuaries to the public and State and Federal Agencies.

F. Water Resources Policy Task Forces

The Division actively participates in WRC and other EOEa agency task forces formed to address various water resources policy issues.

Task Forces active during FY87:

Marine Water Quality Task Force

Water Supply Task Force

Cape Cod Aquifer Assessment Task Force

Ocean Sanctuaries Task Force

Water Resources Policy Task Force

Natural Resources Planning Committee

SCORP Technical Advisory Committee

Forestry Practices G.E.I.R. Technical Advisory Committee

Nonpoint Source Advisory Committee

Water Management Act Advisory Committee

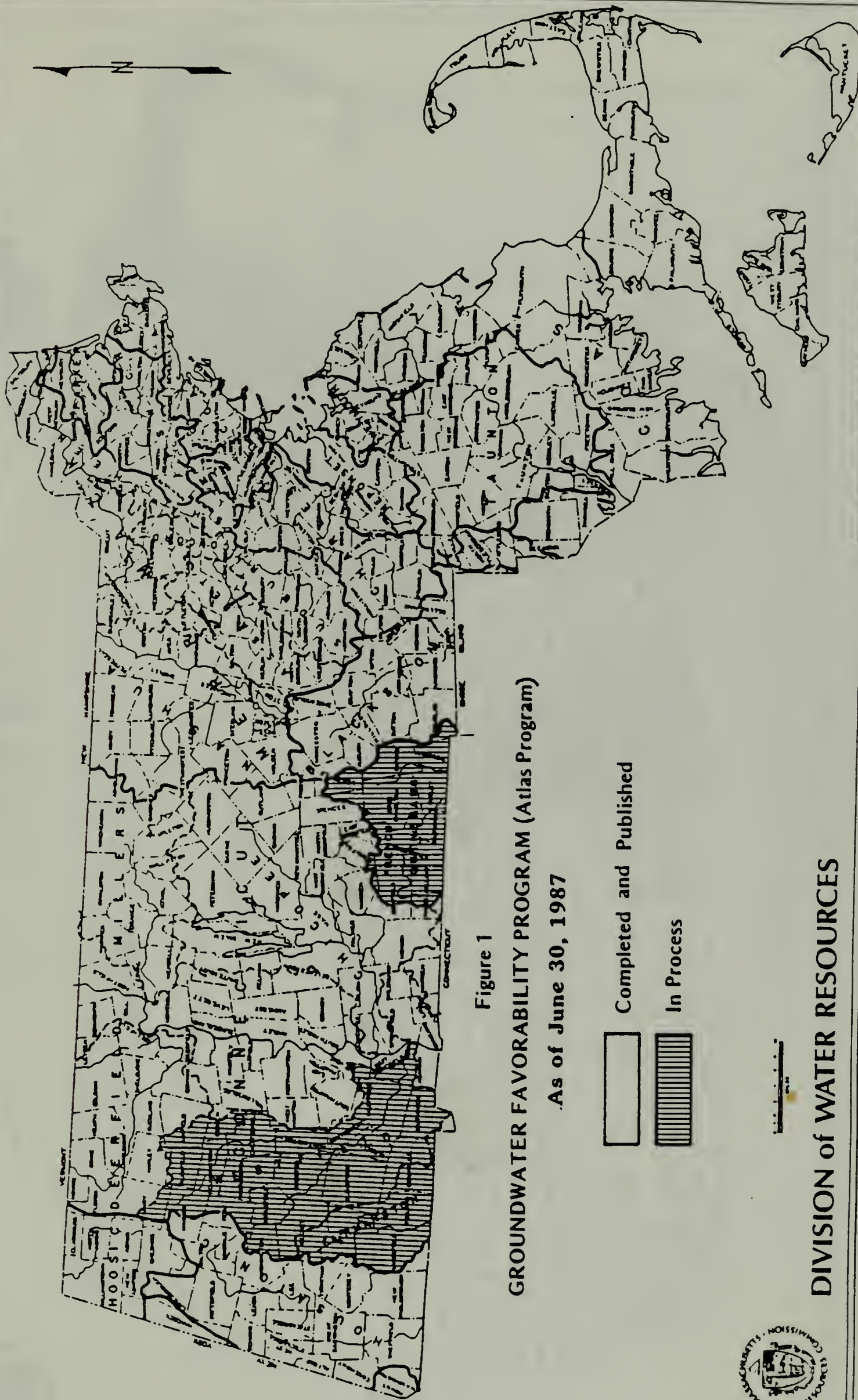


Figure 1
 GROUNDWATER FAVORABILITY PROGRAM (Atlas Program)
 As of June 30, 1987

- Completed and Published
- In Process



DIVISION of WATER RESOURCES

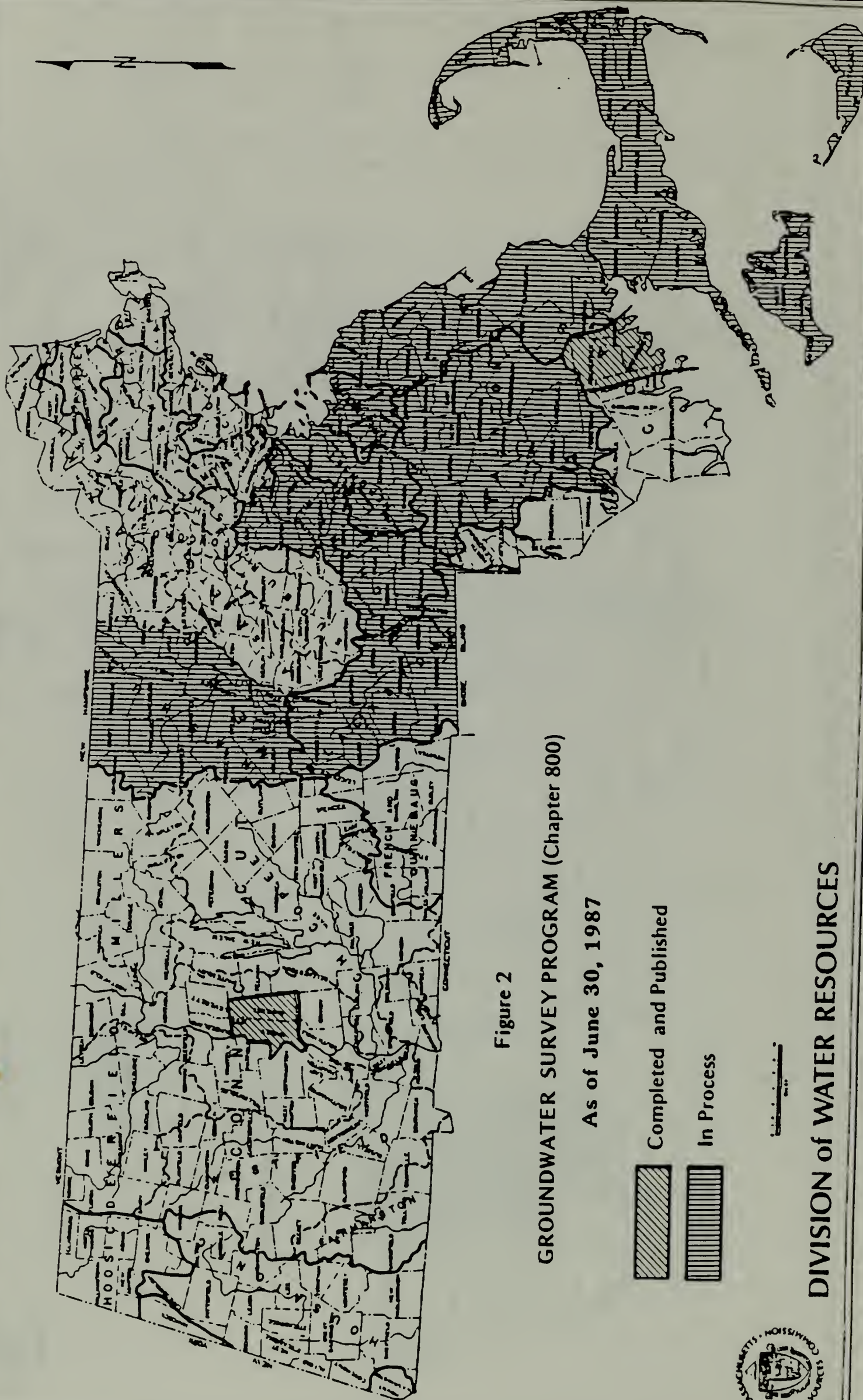




Figure 2

GROUNDWATER SURVEY PROGRAM (Chapter 800)

As of June 30, 1987

-  Completed and Published
-  In Process



DIVISION OF WATER RESOURCES

MASSACHUSETTS PRECIPITATION 1986
(inches)

	<u>State</u>	<u>Northeast Section</u>	<u>Southeast Section</u>	<u>Central Section</u>	<u>Connecticut River Section</u>	<u>Western Section</u>
January	5.13	3.93	6.38	5.43	5.58	4.45
February	3.31	2.82	3.39	3.15	2.99	3.19
March	3.46	3.89	2.88	3.87	3.95	3.67
April	1.82	2.10	2.28	1.92	1.55	1.45
May	2.34	1.60	2.14	2.37	3.35	2.39
June	6.35	7.14	4.34	7.57	6.01	5.83
July	5.48	4.71	6.33	5.02	7.60	7.80
August	3.43	3.83	5.10	4.21	3.01	3.87
September	1.39	1.16	1.24	1.25	1.60	1.97
October	2.58	2.03	3.24	2.49	2.50	2.72
November	5.69	5.67	6.72	6.21	5.33	4.91
December	6.26	7.10	8.05	7.00	5.43	4.15
Year	47.24	45.98	52.09	50.49	48.90	46.40
Normal	44.33	42.62	44.76	44.60	45.16	44.99

MASSACHUSETTS PRECIPITATION 1986
DEVIATION FROM NORMAL
(inches)

	State	Northeast Section	Southeast Section	Central Section	Connecticut River Section	Western Section
January	+1.48	+0.29	+2.45	+1.64	+2.18	+1.25
February	-0.06	-0.59	-0.25	-0.37	-0.37	+0.22
March	-0.41	+0.08	-1.33	-0.20	+0.34	+0.27
April	-1.84	-1.49	-1.72	-1.83	-2.12	-2.30
May	-1.35	-1.77	-1.30	-1.18	-0.75	-1.67
June	+2.77	+3.75	+0.97	+3.87	+2.03	+1.65
July	+1.80	+1.25	+3.35	+1.51	+3.46	+3.45
August	-0.53	+0.22	+1.00	+0.54	-1.02	-0.38
September	-2.20	-2.32	-2.36	-2.47	-2.09	-2.13
October	-0.95	-1.27	-0.34	-0.90	-0.99	-0.68
November	+1.71	+1.74	+2.86	+2.12	+1.37	+1.10
December	+2.48	+3.45	+3.97	+3.09	+1.79	+0.58
Total Excess or Deficiency for Year 1986	+2.90	+3.34	+7.30	+5.82	+3.83	+1.36

MASS. GA12.1: 988

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ANNUAL REPORT
DIVISION OF WATER RESOURCES
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
for the
FISCAL YEAR ENDING - June 30, 1988

GOVERNMENT DOCUMENTS
COLLECTION
JUL 18 1990
University of Massachusetts
Depository Copy

PERSONNEL OF THE DIVISION

(as of June 30, 1988)

Thibedeau, Richard H.	Director
Pyle, O. Fletcher	Associate Civil Engineer
Klock, Thomas E.	Associate Civil Engineer
Clark, Mark E.	Senior Civil Engineer
Maguire, Kevin B.	Senior Civil Engineer
Gildesgame, Myron L.	Chief Planner
Phippen, Peter D.	Hydrologist
Bones, William F.	Regional Planner
Asen, Steven	Regional Planner
Siegfriedt, Faye N.	Regional Planner
Graham, Deborah L.	Regional Planner
Biggio, Linda M.	Regional Planner
Drury, Michele H.	Regional Planner
Yeo, Jonathan L.	Regional Planner
Epstein, Victoria	Geologist
Salomaa, William C	Senior Civil Engineer
Cook Raymond C.	Program Manager
Lesser, William H.	Regional Planner
Beaton, Kim M.	Administrative Assistant
Russo, Roseann	Senior Statistical Clerk
Gonsalves, Eve M.	Junior Clerk Typist

Division of Water Resources

INTRODUCTION

Our Challenge

Provide accurate data and analysis of Massachusetts water resources and efficient planning and management to meet the future water supply needs of Massachusetts while ensuring the environmental integrity of our surface and ground water resources.

Our Focus - Water Resources Planning and Management

THE DIVISION HAS FOUR MAJOR RESPONSIBILITIES

Data Collection and Analysis, River Basin Planning, Flood Hazard Management, and Water Resources Management

Data Collection and Analysis:

Collect, refine, update and analyze basic water resources data in cooperation with the U. S. Geological Survey. Measure precipitation, streamflow and groundwater levels. This data and analysis is used as the foundation for federal, state, regional, and local water resources planning and management programs.

River Basin Planning:

Coordinate a cooperative local, regional, and state effort to develop comprehensive river basin plans for each of the State's twenty-seven river basins. Major components of the plans include demand projections, analysis of the basin's water resources, establishment of minimum streamflow levels and alternatives to meet Year 2020 water needs.

Flood Hazard Management:

Provide floodplain management technical assistance to citizens and local officials; coordinate the National Flood Insurance Program; plan, construct and maintain watershed protection and flood control structures.

Water Resources Management:

Provide staff support to the Water Resources Commission; coordinate the technical review of proposed interbasin transfers and EOEAs; coordinate water resources planning efforts; administer the Ocean Sanctuaries Act; and provide grants for future reservoir site acquisition.

Legislative Mandate

The Division operates under M.G.L., Chapter 21, sections 8-16. Initially under the control of the Water Resources Commission, the Division has been under the supervision and control of the Commissioner of the Department of Environmental Management since 1983, when most of the duties of the Water Resources Commission were transferred to the Division. The next year the Secretary of Environmental Affairs designated the Division as the appropriate agency to provide staff support to assist the Water Resources Commission with river basin planning, administering the Interbasin Transfer Act, and coordinating the State's water resources planning efforts.

I. BASIC DATA

A. Water Resources Data Interchange

One of the important services of the Division of Water Resources is the dissemination of basic water resources data to federal, state and local government, water resources agencies and the general public.

During FY88, the Division responded in a timely manner to an average of 30 daily requests for information and publications.

B. Basic Data Acquisition

1. Basic Data Gathering

This program includes the measuring, orderly recording, evaluation and periodic reporting of precipitation, stream gaging, snow surveys, reservoir elevations and flood monitoring. This information is necessary for detailed water supply and flood control planning, design, construction and operation. The Division operates a system of 201 rainfall stations. Statistical records are maintained on daily, monthly and annual precipitation for each station and compilations for five geographic sections and the state as a whole are computed with comparison to the long-term normal. Rainfall records for calendar year 1987 are attached to this report.

Accomplishments during FY88:

Monthly rainfall reports were computed and averaged. Records were kept and comparisons made to determine surplus/deficient monthly and annual precipitation.

Monthly reservoir levels were received, recorded and reviewed to monitor water levels.

During the winter months information on the amount and water content of snow on the ground was received. With this information the potential runoff was determined for flood control purposes.

Five key stream gages have been installed into the automated satellite network data base with another five to be completed by the end on FY89.

Funds are being requested in order to automate the 25 indicator precipitation stations used to compute the regional and state monthly precipitation reports.

2. Well Drilling Program

The Division is responsible for the yearly registration of well drillers in the Commonwealth. The law requires the registered well driller to file a well completion report within 30 days after a well is drilled.

Accomplishments during FY88:

During the year 331 well drillers were registered.

More than 6300 well completion reports were received and filed for future reference.

A program to upgrade the well registration program was initiated with the Massachusetts Water Well Association.

3. Water Use Data Program

This program focuses on refining water use information for input into the data base of the U.S. Geological Survey (USGS) State Water Use Data System (SWUDS) through a Division of Water Resources/USGS cooperative program to automate basic water resources data. The system is designed to be of maximum utility to other water resources agencies and to the DWR river basin planning effort.

Accomplishments during FY88:

Of the active community water supply sources listed in the Division's records many have been located and entered into the data base. During the past fiscal year the ground water sources in this data base have been accurately located by latitude and longitude. Other pertinent information on these sources has been gathered and compiled in a report prepared by the USGS.

C. Regional Resource Evaluations

1. Water Resources and Priorities Study

This study is conducted in cooperation with the Soil Conservation Service and is designed to expand information supporting the Early Acquisition of Reservoir Sites Program for future water needs. This study evaluates and prioritizes the prime reservoir sites in the State's twenty-seven river basins identified in the Massachusetts Water Resources Study completed in 1978. Using a screening process, the number of sites were reduced to fifty. Field work was completed and work focused on the preparation of draft site reports. Work is suspended at present.

2. "Atlas Program" - (Groundwater Favorability Studies)

This cooperative USGS/DWR program produces basic hydrologic information and assesses the quantity and quality of ground and surface water resources for each river basin in the state.

Accomplishments during FY88:

All but two of the basin studies have been published and distributed. The French/Quinebaug and Westfield/Farmington studies are in final stages of publication.

A final state summary atlas will be finalized during FY89.

3. Stream Gaging Program

This program is conducted in cooperation with the U.S. Geological Survey.

Accomplishments during FY88:

Streamflow data was collected for the 78 gaging stations operating in 1988.

Analysis of the 1987 water year surface water data was completed.

4. Groundwater Assessments Study Program

This cooperative program with the U.S. Geological Survey provides baseline data on major aquifers of the river basins in the Commonwealth. These comprehensive assessments identify areal extent, depth, hydrologic characteristics, the quality and quantity of water and the effects of water use alternatives.

Accomplishments during FY88:

Chapter 800 Studies -- The Charles, Nashua, and Taunton River Basin studies received peer review in Boston and were then forwarded to USGS headquarters in Reston, Virginia and again sent back to the Boston office for revisions. Since then, they have been returned to Reston, Virginia for final approval which is expected in September of 1988.

Blackstone River Basin -- the writing of this report was completed during FY88 and peer review is underway.

Nashua River Basin -- peer review has been completed and the report was forwarded to Reston, Virginia for review.

North River Basin -- the writing of this report is partially complete.

Neponset River Basin -- field work for this report has been completed and the basic data analysis is in progress.

Plymouth - Carver Report -- the first draft of this report is nearing completion.

Cape Model Study -- this study was started during this fiscal year and is now one-third complete.

D. Early Acquisition of Reservoir Sites: MGL Chapter 21, Section 9A

The Water Resources Commission (WRC) is authorized to acquire land, water or easements to protect future water resources and conserve water impoundment sites and adjacent lands for the purpose of flood control, low flow augmentation and/or municipal water supply.

If a city, town, or district meets the criteria established by the WRC for the acquisition of such land, the Division of Water Resources will advise the community, or acquire such land by special legislation and deed the land acquired to the community or reimburse the community for land purchase.

To date, the following communities have benefited from this program: City of Newburyport, 1981; Salem and Beverly Water Supply Board, 1983; the Abington and Rockland Water Works, 1984. The Town of Rockport has expressed an interest in the program.

Accomplishments in FY88:

The towns of Danvers and Middleton have continued to acquire land to expand Emerson Brook Reservoir in Middleton which serves both communities. The Water Resources Commission approved this acquisition in 1986.

II. FLOOD CONTROL

A. Watershed Protection and Flood Prevention Act (PL 566) Program

The flood control program to prevent loss of lives and to reduce damage caused by floods is a cooperative effort of the Division of Water Resources and the U. S. Department of Agriculture, Soil Conservation Service, under the Watershed Protection and Flood Prevention Act (PL 566). The first flood control project was built in 1961 and since then twenty-nine projects have been completed. The Division of Water Resources, with annual budget allocations, is responsible for maintaining twenty-three of these projects.

A five-year program was initiated to ensure both project safety and effective operation. Extensive maintenance activities were conducted to repair damage caused by vandalism.

Accomplishments during FY88:

Fisk (Baiting Brook) site in Framingham. A landscaping plan for the completed facility was prepared, a contract was awarded and the planting work is near completion.

Clam Lake site in Sandisfield. Funds have been requested in order to utilize the area as a flood control facility and for recreational purposes.

Washington Mountain Lake Dam in Washington. Investigations are underway to determine the cause and to evaluate the alternatives for repairs required because of a seepage problem.

Schoolhouse Lake multi-purpose site in Washington. The contract was signed on July 25, 1986. Construction efforts are on schedule with seventy-five percent of the project completed. Completion is projected for the second quarter of FY89. Project will provide flood prevention benefits as well as an additional water supply source for the Town of Lee.

1000 Acre Swamp site in New Marlboro. Repair work on the water control gate has begun. In accordance with the original interstate agreement, the State of Connecticut will be billed for its share of the cost of repairs.

Ross site in Berlin. The contract to stabilize the surface of the borrow area for the project was awarded. The work has been completed and a contract to establish groundcover will be awarded in FY89.

Repairs to Federally-Built Local Flood Protection Works. A grant program was initiated to repair deteriorated facilities in cities and towns throughout the state. Activity at these sites will commence during FY89.

B. Floodplain Management Studies

The joint DWR/SCS (U.S. Soil Conservation Service) studies, authorized by Section 6 of Public Law 83-566, provide needed information to communities where flood damage is a serious concern and local governments want to take action to reduce these damages; thus, these studies are site specific and of a problem-solving nature.

The Division of Water Resources is the coordinating agency for the SCS Flood Management Program. It receives applications from the communities, provides data used in conducting the studies and coordinates agency review of draft reports.

Accomplishments during FY88

North River (Deerfield River Basin) in the Town of Colrain -- after this study was initiated, the area was hit by floods caused by the storm of March 31, April 1 and April 4-8. Because of the storms, the initial data collected was affected and had to be checked for accuracy.

Meanwhile SCS has spent half a million federal dollars repairing flood damage to agriculture, streambanks and infrastructure in this part of the Deerfield River. A first draft of the floodplain management study is due by September 1988.

Salisbury Brook in the City of Brockton -- the preliminary report was completed and has been reviewed by city officials. This report investigated the concept of reservoir management in the watershed to prevent downstream flooding. This information was then furnished to the U.S. Corps of Engineers which, at the request of city officials, assumed another phase of the study looking at the urban drainage system.

C. Federal Emergency Management Agency Program

1. National Flood Insurance Program

There are 324 communities in the Commonwealth participating in the National Flood Insurance Program. Three communities remain suspended from the program because of failure to adopt the required land use measures.

2. Flood Hazard Management Program

The Flood Hazard Management Program (FHMP) assisted local communities in evaluating the effectiveness of their floodplain management procedures. Recommendations for improved procedures were made during telephone conversations and personal visits to communities. Workshops, review of local bylaws and review of selected projects in the floodplain were additional accomplishments during the past year.

Undertaken was a special project to develop two different handbooks designed to assist local officials in their review of projects in the floodplain.

Accomplishments during FY88

Conducted 50 Community Assistance visits to communities and provided on-site assistance to determine if the NFIP regulatory requirements of FEMA have been met, along with the Massachusetts State Building Code Floodplain requirements and the Massachusetts Wetlands Protection regulations.

Distributed 2000 National Flood Insurance maps and publications to private industry, public agencies, property owners, municipalities and other organizations

Presented four Flood Loss Reduction Workshops statewide to community officials involved in the permitting of structures in the floodplain. Those attending were primarily Building Inspectors and Conservation Agents.

Prepared two flood hazard manuals. One as a guide for local building officials and the other as a flood study guide to 323 NFIP cities and towns.

Provided assistance to local government officials in developing ordinances and in determining the adequacy of zoning by-laws and consistency in relation to the recent FEMA requirements under the NFIP and the amendment to section 744 of the State Building Code.

II. WATER RESOURCES PLANNING AND MANAGEMENT

A. River Basin Planning Program

The Division of Water Resources (DWR) in the Department of Environmental Management, provides technical staff support to the Water Resources Commission and is responsible through the Commission, for long-range water resources planning for the Commonwealth. The central element in the development of a statewide water resources management plan is the preparation of management plans for each of the twenty-seven river basins of the Commonwealth. These plans are being developed pursuant to the Water Resources Planning Regulations (313 CMR 2.00) adopted by the Commission. DWR is responsible for implementing the process outlined in the regulations, which provide that plans be based on local, regional, and state assessments of water needs and the availability of water resources. The plans also must be in conformance with the Massachusetts Water Supply Policy Statement and be consistent with other water-related state and federal laws and regulations.

Accomplishments during FY88

Prepared and published for comment, drafts of the Inventory and Analysis of Current and Projected Water Use, Volume I for the Concord, Hudson, Nashua, Neponset, South Coastal (North, South, Jones rivers) and the Taunton River basins.

These reports included projections of 2020 water demand and population for the communities in each of these basins.

Published a draft and final copy of the Charles River Basin, Volume I study, as a first-step in the planning process for that basin.

Published for public review and comment a draft of Recommendations to Meet Projected Demand, Volume III for the Ipswich River Basin.

B. State Land Management Planning

To assist in the development of the Guidelines for Operation and Land Stewardship (G.O.A.L.S.) plans for the State's Forest and Parks, the Division provides water resources data and reviews the water resources section of the draft plans.

Accomplishments in FY88

Reviewed the hydrologic section of the plans for the Wompatuck State Park in Hingham and Cohasset; the DAR State Forest in Goshen; and the J. Harry Rich State Park in Groton. Informational meetings were attended regularly.

C. Interbasin Transfer Act

The Interbasin Transfer Act delegated to the Water Resources Commission the authority to approve or disapprove the transfer of water between river basins. The Division is responsible for coordinating the technical review of proposed interbasin transfers.

Accomplishments during FY88

Met with members of the Southeastern Massachusetts Partnership to provide technical assistance regarding the proposal to connect the City of Brockton with the City of Taunton water supply system.

Provided guidance and technical assistance to develop proposals to implement a regional water supply network in the Bedford-Billerica area.

In cooperation with the Water Resources Commission staff, proposals by the Massachusetts Water Resources Authority for the extension of sewer lines from Framingham and Wellesley were analyzed and reviewed.

D. Water Resources Planning Task Force

The Water Resources Commission established a Water Resources Planning Task Force to assist the Commission in coordinating water resources planning among the agencies and departments in the Executive Office of Environmental Affairs. The task force is the primary mechanism to implement Chapter 21A Section 8B(b) establishing the planning and coordinating functions of the Commission. The Division chairs and provides staff support to the Task Force.

The Task Force met bi-monthly during FY88 and focused on the following issues:

Developing guidelines for establishing minimum instream flow levels.

Developing guidelines for Local Water Resources Management Plans.

Discussed the relationship between minimum streamflow and effluent discharges into the State's rivers.

Discussion and comment on the Charles River Basin, Volume I report, and the Ipswich River Basin, Volume III, draft basin plan.

The status of anadromous fish and problems relating to water quality and quantity in the state's rivers.

State and local recreational facilities in the Charles River basin.

The status of resident fisheries and the relationship to minimum streamflow guidelines.

MWRA Local Sources Program and long-range water resources planning for water conservation.

Agricultural land use and irrigation practices.

Water-based recreational activities as a policy for the SCORP 88 document

MWRA's Long-Range Water Supply study.

Minimum streamflow and the Goals program at the Division of Planning and Development; impacts of low flow on forests and parks.

E. Ocean Sanctuary Program

The Ocean Sanctuaries Act, M.G.L., C. 132A ss. 13 and 16-18 and Regulations (302 CMR 5.00) places the ocean sanctuaries under the control of the Department of Environmental Management. The Division's Chief Planner was designated Ocean Sanctuaries Coordinator responsible for implementing the Act which states that sanctuaries shall "be protected from any exploitation, development, or activity that would seriously alter or otherwise endanger the ecology or the appearance of the ocean..."

Accomplishments during FY88

Reviewed plans for the expansion of the Onset Bay Marina in Wareham.

Provided assistance in the review of permits for conversion of a fish packing plant to condominiums in Westport.

Commented on proposed changes to Chapter 91 regulations.

Provided assistance in promulgating new regulations for the Ocean Sanctuaries Act.

Responded to a request for the applicability of the Act to proposed wastewater system improvements in New Bedford, Chatham, Plymouth and Swampscott.

Participated in the development of guidelines for the construction and licensing of small docks and piers.

F. Public Information

A Public Information program was instituted during the year. It was begun to increase the visibility of the Division and to bring to the attention of the public the diversity of its programs and the breadth of its data analysis activities and information gathering and dissemination capability

Accomplishments during FY88

Prepared for display at environmental conferences were three exhibits depicting DWR programs, policies and activities.

Twelve conferences and meetings were attended at which the exhibits were displayed; DWR public information materials distributed and other publications prepared by DWR were displayed and distributed to conference participants.

Prepared a "Directory of State, Federal and Regional Water Planning and Management Agencies" 8th Edition.

G. Water Resources Policy Task Forces

The Division actively participates in the Water Resources Commission and other EOEPA agency task forces formed to address various water resources policy issues.

Task Forces active during FY88:

Water Resources Planning Task Force

Marine Water Quality Task Force

Water Supply Task Force

Cape Cod Aquifer Assessment Task Force

Ocean Sanctuaries Task Force

Water Resources Policy Task Force

Natural Resources Planning Committee

SCORP Technical Advisory Committee

Forestry Practices G.E.I.R. Technical Advisory Committee

Nonpoint Source Advisory Committee

Water Management Act Advisory Committee

MWRA Interagency Task Force

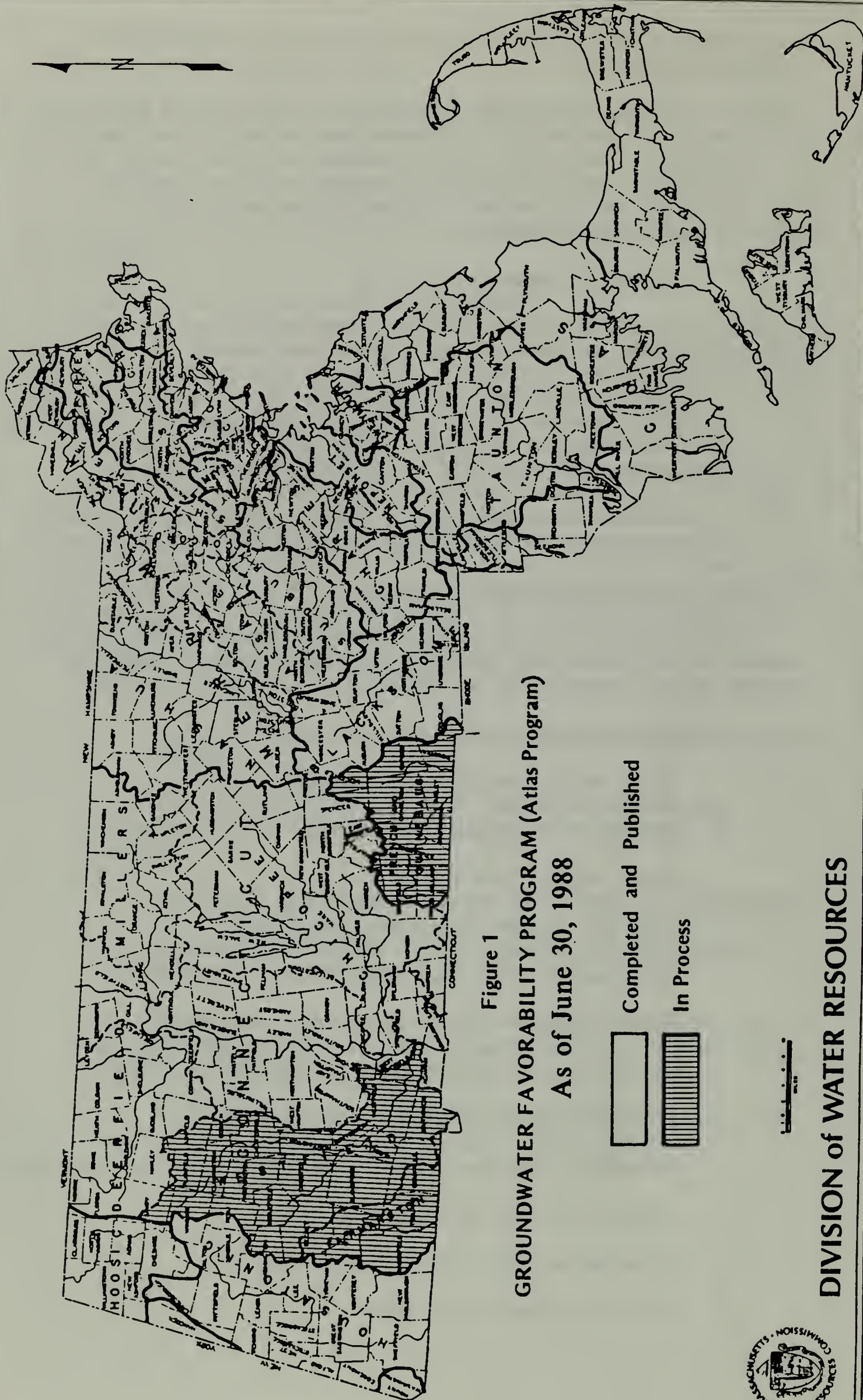


Figure 1
 GROUNDWATER FAVORABILITY PROGRAM (Atlas Program)
 As of June 30, 1988

Completed and Published
 In Process



DIVISION of WATER RESOURCES

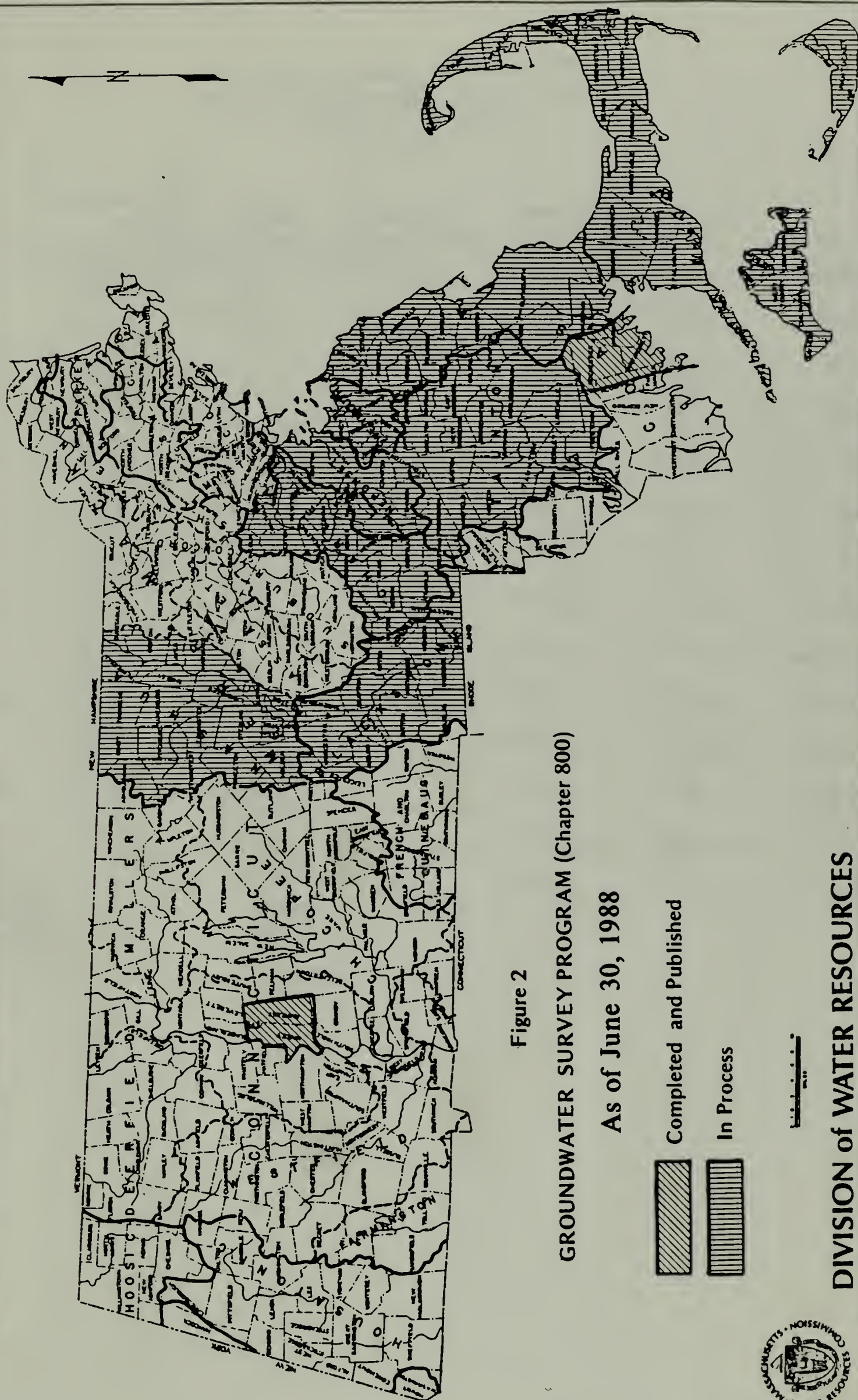


Figure 2
GROUNDWATER SURVEY PROGRAM (Chapter 800)
As of June 30, 1988

Completed and Published
In Process



DIVISION of WATER RESOURCES

MASSACHUSETTS PRECIPITATION 1987
(inches)

	State	Northeast Section	Southeast Section	Central Section	Connecticut River Section	Western Section
January	5.48	5.88	6.54	5.95	4.06	3.97
February	0.52	0.32	1.02	0.19	0.27	0.94
March	3.79	4.06	4.65	3.88	4.03	3.00
April	8.19	10.86	9.17	10.90	6.42	6.02
May	1.75	1.31	2.57	1.50	1.65	2.51
June	2.85	2.42	1.76	3.85	3.99	2.80
July	1.34	0.92	1.24	1.02	1.97	3.55
August	3.69	3.04	3.32	3.64	4.22	3.85
September	6.04	6.45	6.48	5.47	7.35	6.32
October	3.80	2.73	2.31	4.23	4.72	5.49
November	2.96	3.08	3.72	3.02	3.13	2.53
December	2.69	2.47	4.00	2.24	2.17	1.76
Year	43.10	43.54	46.78	45.89	44.11	43.64
Normal	44.45	42.69	44.90	45.79	45.21	45.10

MASSACHUSETTS PRECIPITATION 1987
DEVIATION FROM NORMAL
(inches)

	State	Northeast Section	Southeast Section	Central Section	Connecticut River Section	Western Section
January	+1.77	+2.23	+2.58	+2.13	+0.65	+0.75
February	-2.72	-3.09	-2.62	-3.37	-3.04	-2.04
March	-0.21	+0.25	+0.46	-0.23	+0.37	-0.40
April	+4.49	+7.27	+5.20	+7.14	+2.77	+2.30
May	-1.93	-2.04	-0.85	-2.20	-2.46	-1.53
June	-0.84	-0.99	-1.63	+0.01	-0.01	-1.41
July	-2.25	-2.55	-1.80	-2.65	-2.22	-0.85
August	-0.18	-0.57	-0.80	-0.18	+0.20	+0.20
September	+2.49	+2.99	+2.91	+1.71	+3.62	+2.25
October	+0.33	-0.56	-1.27	+0.67	+1.23	+2.10
November	-1.09	-0.87	-0.19	-1.25	-0.85	-1.30
December	-1.21	-1.22	-0.14	-1.68	-1.52	-1.83
Total Excess or Deficiency for Year 1987	-1.35	+0.85	+1.85	+0.10	-1.26	-1.76

ACME
BOOKBINDING CO., INC.

APR 4 2000

100 CAMBRIDGE STREET
CHARLESTOWN, MASS.

